
The role of women and the politics of gender, once invisible in the history of computing, can now boast a generation of solid scholarship. Marie Hicks's *Programmed Inequality* is an important and challenging addition to this literature on several counts. First, her focus on the British Civil Service reveals different dynamics of gender and power than previous studies focused on the US government or private industry. While federal employers in the United States were relatively welcoming to women and enabled some to become recognized as experts, the UK Civil Service as described by Hicks was much more rigidly bound by class and gender hierarchies. Second, she problematizes distinctions between skilled and unskilled computer work, showing how gender and class bias have colored our assumptions about which jobs require skill. Third, she argues for the need to include sexual orientation in gender analysis, noting that historically women have been positioned in the labor force not simply as females but as actual or future wives to male breadwinners. The heteronormative assumption that men would need to support a family while women could depend on a husband's income was used to justify severe limits on women's pay and promotion, even in the supposedly meritocratic Civil Service. Fourth, she makes a bold claim that systematic gender bias in the Civil Service shaped the design of computers themselves and thereby undermined the competitiveness of the British computer industry.

The book covers the period 1930–1979. The first chapter, on women's computer work during World War II, resists treating this period as exceptional, demonstrating that women's wartime work continued an earlier trend of feminized machine work and that some women transferred directly from wartime to peacetime computing jobs. Hicks describes legal impediments to workplace equality, notably the marriage bar (in place until 1946), which forced women who wanted to keep their Civil Service jobs to marry and have babies in secret. Chapter 2 relates how the government's fixation on cost-cutting in the lean postwar years led to its exploitation of lower-paid women. As the number of female workers grew, however, their demands for equal pay threatened sex discrimination as a cost-saving measure. The Civil Service responded with a fateful move: it created a new classification called the “machine grades” that would be exclusively female and thus exempt from equal pay laws. While this maneuver ensured savings in the short term, it had the unintended consequence of making it virtually impossible to attract men to computer jobs when the government tried to change course in later decades.

Chapter 3 includes one of Hicks's most fascinating discoveries: how the British computer industry tried to export its gender-stratified organization of labor to former colonies along with its machines. Computer manufacturers Power-Samas and ICT trained cadres of local women in India and Ghana to occupy the same low-level, underpaid role as their British counterparts. Hicks argues that this labor regime was an imported ideology, not part of the local culture or any technological imperative. She notes, “When Indian companies set up their own computing installations, the gendered mores of British computing usually did not attach,” with male or mixed-gender staffs common (120). Here and throughout the book, well-chosen illustrations convey the semiotics of gender and skill, with female workers foregrounded, receding into the background, or invisible to reflect the prevailing politics of technical labor.

Chapter 4 describes the British government's shift in the late 1960s from viewing computing as merely technical to seeing it as a management function that called for a new—and specifically masculine—workforce. But the Civil Service's attempt to regender computing jobs was stymied by its own past success in casting this work as feminized and unskilled. Hicks exposes the bitter irony of this masculinization effort: while government hiring policy was based on the assumption that men were more skilled and more committed to their careers than women, the stigma attached to computer work meant that the Civil Service had to lower its standards to attract male workers—who often left for lucrative industry jobs as soon as they were trained. “Ignoring the women already working in the jobs meant that the single biggest reserve of computer experience and talent went to waste” (152). While her case for this is compelling, her focus on government rather than academic or industry workplaces does make one wonder whether the gender and class divisions so vividly depicted for the Civil Service played out differently in work environments where hiring and promotion decisions could be made more locally and flexibly.

As the book's subtitle promises, Hicks makes a persuasive case in chapters 4 and 5 that these discriminatory policies help explain why the British computer industry “lost its edge” against competitors like IBM. Building on the work of scholars like John Hendry and Jon Agar, Hicks relates how the government forcibly realigned and consolidated the British computer industry, but she makes sense of this within the logic of a gender-stratified labor market. Unable to assemble the skilled male workforce it wanted, the government instead pressured computer manufacturers to supply large, centrally controlled machines that would optimize its de facto workforce: scarce, leadership-track men and numerous but underutilized technical women. These machines did not
meet the demands of the commercial market and left British companies increasingly unable to compete.

Contrary to what we might expect—given the current emphasis on STEM training for girls as a route to empowerment—Hicks points out that women were excluded from high-level computer jobs based not on their lack of technical skill but on their perceived lack of leadership potential, which was still coded as exclusively masculine. “In everything but name, these women were in fact the computer experts that the government was desperately seeking to hire. Gender and class, much more than skill, determined workers’ roles in the computing hierarchy” (230). As she notes in the book’s conclusion, policy efforts focused on training individual women will not undo the structural discrimination that has shaped career paths in the computer industry.

Hicks’s eye-opening account reinforces the need for historians to look beyond the United States to get a fuller picture of the coproduction of gender, computing systems, and government regimes. She makes a compelling case for studying computer workers below the level of heroic male inventors or even of female pioneers with overlooked but identifiable individual contributions. The women in her story do not have inventions or “firsts” connected to their names, but they provided the skilled and dedicated labor that powered the Civil Service’s transition to computerized information processing—and could have taken it so much further had their technical skills and leadership potential been recognized and valued.

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It’s a Question of Trust: Halt and Catch Fire’s Third-Season Review

Fiction is perhaps one of the greatest technologies, allowing us to go back in time and imagine alternative versions of history. In this way, AMC’s-three year-old television series Halt and Catch Fire (HCF)1 reimagines the computing industry’s history in order to make sense of things that happen in it today. In the process, it blurs the lines between fiction and reality, illustrating Katherine Hayles’s argument that fictional texts are not “merely passive conduits” and that they “actively shape what the technologies mean and what the scientific theories signify in cultural contexts.”2 HCF looks at the past with critical eyes by making references to contemporary issues; it reverse engineers the computing industry.

Starting in 1980s Texas, the show focuses on four protagonists: Joe MacMillan is the “Steve Jobs” egomaniac-visionary who would do anything to sell his ideas. He persuades Gordon Clark (the “Steve Wozniak”–style shy-software genius) to reverse engineer IBM’s BIOS in order to create a new personal computer. The series also imagines what would happen if this powerful duo had a female counterpart: Donna Clark, a brilliant hardware designer (who is Gordon’s wife), and Cameron Howe, a software wizard who hates authority. This refreshing take upgrades the program by showing, without falling into the usual clichés, how women have been struggling to fit into this highly masculine field.

The show highlights the complex process of conceiving technologies, which starts by thinking what it could be in the future and then having to sell it to your partners, your employees, the stock holders of the company, and, most important, the people. The first season was about its protagonists’ efforts to persuade people that the personal computer is something that every household should have. The second season highlighted the industry’s gender politics by following Clark and Howe as they started Mutiny, a company that sells computer games and bulletin board systems. Now in its third season, HCF shows how Mutiny develops online transaction systems and starts to gravitate toward the idea of a World Wide Web. Like the second season, this one emphasizes how different players—venture capitalists, board members, regulators, technology journalists, hackers, and other competitors—struggle to determine whether the timing, design, and price for computing technologies are ripe.

The move from Texas to Silicon Valley in the third season highlights the increased competition, capital, stress, and gender discrimination that its two female leads experience. For example, when Clark and Howe have to persuade venture capital guys to invest in Mutiny, the women receive subtle invitations to close the deal between the sheets. Later on, when trying to “go public” on their initial public offering, they are asked about shopping for shoes. This shows that the process of persuasion in the computing industry is not only about the technologies themselves but also requires engagement with a built-in gendered bias that unfortunately persists.

The third season also highlights the role that trust and security play in its characters’ professional ambitions and personal lives. Opening the third season, Joe MacMillan pitches his new antivirus company by asking, “What should
the price of security really be? How much should we pay to feel safe? Freedom from fear is a right not a commodity.” Mastering the art of selling ideas, he signals what will be at the heart of this season. Whether between business, romantic, or sexual partners, between subscribers and the technologies and services they use, or between parents and their kids, this season emphasizes how difficult it is to trust people and how these social insecurities are coded into the machines and programs people develop and use. With the AIDS epidemic looming in the background, the third season portrays the complexities of people’s social networks. It shows how 1980s cultural conditions influence technological developments, such as computer viruses. It also shows the beginning of Silicon Valley’s trend of solving social problems and vulnerabilities by offering a technological solution.

A complementary issue to security is control, and HCF shows how the different characters try to gain control in their own domains. As the pressure to show growth increases, Howe and Clark find themselves fighting over who gets to decide the future of the company. But this conflict highlights a deeper concern about the idea of the “finished product” and the acceleration of technological development in Silicon Valley. Cameron strives to what she thinks is the perfect product, while Donna, who echoes Mark Zuckerberg’s “move fast and break things,” thinks that “perfect is the enemy of good.” The battle for control in this season shows that the protagonists ideals clash with economic pressures that this industry imposes.

The final two episodes make a four-year jump into 1990. At COMDEX 1990, we see Howe after being kicked out of her own company. At the convention, she launches the fourth edition of her computer game Space Bike, wherein a female character rides in space and eats candy. Space Bike is a unique game because players can never win; they can just keep on playing. In this sense, the game is a metaphor for the four protagonists who continue pursuing the next big thing no matter what obstacles or triumphs they encounter. Each new version of technology they develop is also an improved and upgraded version of themselves.

At the end of the season, Clark, who divorced Gordon and takes her maiden name Emmerson, brings everyone together to work on the World Wide Web. The characters disagree on what the Web will look like, but MacMillan sees it as a metaphor for a door that they can in the future charge admission for: “the moment we decide what the web is we’ve lost, if we try to tell people what to do with it, we’ve lost. All we have to do is build a door and let them inside.” This need to imagine and invent how technologies will look like illustrates Janet Abbate’s argument about the history of the Internet from its military roots to the home PC. As she observes, the Internet “had to be invented—and constantly reinvented—at the same time as the technology itself.”

In the final episode, we see exactly how such visions are invented and debated by the characters as they discuss topics such as deregulation, the integration of different programming languages, hardware problems, and competition with large firms. Importantly, we see how the future of both computing technologies and the relations of the people that create them are always under construction, economic interests, and (social) engineering. In other words, the series shows the present needs to “Halt and Catch Fire” continually in order to reinvent the future.

References and Notes

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